What is claimed is:

1. A nasal cannula for supplying a respiratory gas to a patient, the nasal cannula comprising:

a pair of supply lines which each have a head at one end thereof with a discharge opening therein for discharging a respiratory gas, and the opposite end of each of the pair of supply lines being connectable to a respiratory gas source;

wherein each head is sized to be snugly received and retained within one of the nasal cavities of the patient while forming a sufficient leakage passage, between a portion of inwardly facing nasal cavity skin of a patient and a portion of an exterior surface of the head, to facilitate exhausting of any excess respiratory gas supplied to the patient through the leakage passage and also facilitate inhalation of any room air required in excess of the respiratory gas to be supplied to the patient.

2. The nasal cannula according to claim 1, wherein an exterior surface of the head has a plurality elongate troughs formed therein for partially defining a plurality of leakage passages therein to facilitate exhausting of any excess respiratory gas and inhalation of any room air required by the patient.

3. The nasal cannula according to claim 2, wherein the exterior surface of the head has between six and eight elongate troughs formed therein which are equally spaced about a circumference of the head, and each of the elongate troughs partially defines one of the leakage passages in the head to facilitate exhausting of any excess respiratory gas and inhalation of any room air required by the patient.

4. The nasal cannula according to claim 2, wherein each of the plurality elongate troughs is formed by a pair of adjacent planar side surfaces which diverge away from a common elongate valley toward a pair of spaced apart but adjacent elongate ridges to partially define one of the plurality of leakage passages.

5. The nasal cannula according to claim 2, wherein each one of the leakage passages has a cross sectional open area of between about 0.002 square inches (0.013 $cm^2$) and 0.0055 square inches (0.035 $cm^2$).

6. The nasal cannula according to claim 2, wherein each head has a maximum width dimension of between about 0.345 of an inch (0.88 cm) about 0.70 of an inch (1.8 cm) and a length of between about 0.30 of an inch (0.76 cm) and about 0.60 of an inch (1.5 cm).

7. The nasal cannula according to claim 1, wherein the pair of supply lines are connected with one another by a central bridge member which has a sufficiently short axial length that spans substantially no more than a width of a philtrum of the patient.

8. The nasal cannula according to claim 1, wherein the nasal cannula is manufactured from a flexible material; and

a second end of each of the supply lines bends away from one another and is curved so as to conform generally with a curvature of a face of a patient.

9. The nasal cannula according to claim 8, wherein the second end of each of the supply lines is coupled to an auxiliary respiratory gas supply line, at least the second end of each of the supply lines has a sufficient stiffness so as to urge the attached auxiliary respiratory gas supply line, coupled thereto, to pass beneath a patient's cheekbone area when the nasal cannula is donned by a patient.

10. The nasal cannula according to claim 1, wherein a central bridge member aligns the pair of supply lines parallel to one another to facilitate insertion of the heads, carried by the ridge of the pair of supply lines, within the nostrils of the patient.

11. A nasal cannula assembly for supplying a respiratory gas to a patient, the nasal cannula assembly comprising:

a pair of supply lines which each have a head at one end thereof with a discharge opening therein for discharging a respiratory gas, and the opposite end of each of the pair of supply lines being connected to an auxiliary respiratory gas supply line; and a remote end of each of the auxiliary respiratory gas supply line is connected with a respiratory gas source for supplying a respiratory gas to a patient;

wherein each head is sized to be snugly received and retained within one of the nasal cavities of the patient while forming a sufficient leakage passage, between a portion of inwardly facing nasal cavity skin of a patient and a portion of an exterior surface of the head, to facilitate exhausting of any excess respiratory gas supplied to the patient through the leakage passage and also facilitate inhalation of any room air required in excess of the respiratory gas to be supplied to the patient.

12. The nasal cannula assembly according to claim 11, wherein an exterior surface of the head has a plurality elongate troughs formed therein for partially defining a plurality of leakage passages therein to facilitate exhausting of any excess respiratory gas and inhalation of any room air required by the patient.

13. The nasal cannula assembly according to claim 12, wherein the exterior surface of the head has between six and eight elongate troughs formed therein which are equally spaced about a circumference of the head, and each of the elongate troughs partially defines one of the leakage passages in the head to facilitate exhausting of any excess respiratory gas and inhalation of any room air required by the patient.

14. The nasal cannula assembly according to claim 12, wherein each of the plurality elongate troughs is formed by a pair of adjacent planar side surfaces which diverge away from a common elongate valley toward a pair of spaced apart but adjacent elongate ridges to partially define one of the plurality of leakage passages.

15. The nasal cannula assembly according to claim 12, wherein each one of the leakage passages has a cross sectional open area of between about 0.002 square inches (0.013 $cm^2$) and 0.0055 square inches (0.035 $cm^2$).

16. The nasal cannula assembly according to claim 12, wherein each head has a maximum width dimension of between about 0.345 of an inch (0.88 cm) about 0.70 of an inch (1.8 cm) and a length of between about 0.30 of an inch (0.76 cm) and about 0.60 of an inch (1.5 cm).

17. The nasal cannula assembly according to claim 11, wherein the pair of supply lines are connected with one another by a central bridge member which has a sufficiently short axial length that spans substantially no more than a width of a philtrum of the patient to space the pair of supply lines from one another.

18. The nasal cannula assembly according to claim 11, wherein the nasal cannula is manufactured from a flexible material; and

a second end of each of the supply lines bends away from one another and is curved so as to conform generally with a curvature of a face of a patient.

19. The nasal cannula assembly according to claim 18, wherein the second end of each of the supply lines is coupled to an auxiliary respiratory gas supply line, at least the second end of each of the supply lines has a sufficient stiffness so as to urge the attached auxiliary respiratory gas supply line, coupled thereto, to pass beneath a patient's cheekbone area when the nasal cannula is donned by a patient.

20. A respiratory therapy system for supplying a respiratory gas to a patient via a nasal cannula, the respiratory therapy system comprising:

a source of respiratory gas for supplying a respiratory gas to a patient;

a nasal cannula connected to the source of respiratory gas for receiving the respiratory gas and supplying the respiratory gas to nostrils of a patient;

the nasal cannula comprising:

a pair of supply lines which each have a head at one end thereof with a discharge opening therein for discharging a respiratory gas, and the opposite end of each of the pair of supply lines being connected to an auxiliary respiratory gas supply line; and a remote end of each of the auxiliary respiratory gas supply line is connected with a respiratory gas source for supplying a respiratory gas to a patient;

wherein each head is sized to be snugly received and retained within one of the nasal cavities of the patient while forming a sufficient leakage passage, between a portion of inwardly facing nasal cavity skin of a patient and a portion of an exterior surface of the head, to facilitate exhausting of any excess respiratory gas supplied to the patient through the leakage passage and also facilitate inhalation of any room air required in excess of the respiratory gas to be supplied to the patient.

21. The respiratory therapy system according to claim 20, wherein the respiratory therapy system further includes a heater for heating the respiratory gas to a desired temperature prior to delivering the respiratory gas to the patient.

22. The respiratory therapy system according to claim 20, wherein the respiratory therapy system further includes a humidifier for supplying humidity to the respiratory gas prior to delivering the respiratory gas to the patient.

23. The respiratory therapy system according to claim 20, wherein the respiratory therapy system further includes a heater for heating the respiratory gas to a desired temperature prior to delivering the respiratory gas to the patient; and

the respiratory therapy system further includes a humidifier for supplying humidity to the respiratory gas prior to delivering the respiratory gas to the patient.

24. The respiratory therapy system according to claim 23, wherein a humidity sensor and a temperature sensor are coupled to a controller to provide inputs concerning the humidity and the temperature of the respiratory gas, and the controller controls operation of the humidifier and the heater to control the temperature and the humidity of the respiratory gas prior to delivery to the patient.

25. The respiratory therapy system according to claim 24, wherein the respiratory gas system provide the respiratory gas at a relative humidity of between about 70 percent

and 100 percent and a temperature of between about 80°F (26.6°C) and about 90°F (32.2°C).

26. The respiratory therapy system according to claim 20, wherein the respiratory therapy system provides a constant flow of respiratory gas, during operation of the respiratory therapy system, of between about 26 and 60 liters per minute.

27. The respiratory therapy system according to claim 20, wherein the respiratory gas system further includes a respiratory gas metering device to facilitate conservation of use of the respiratory gas during operation of the respiratory gas system.

28. The respiratory therapy system according to claim 20, wherein the respiratory gas supply lines and the nasal cannula each have gradual bends, transitions, expansion and contraction therealong so that the respiratory gas, as the respiratory gas flows from the source of respiratory gas to the nasal cannula, minimizes generation of noise.

29. A method of treating a patient with sleep disorder with a respiratory gas, the method comprising the steps of:

inserting prongs of a nasal cannula within respective nostrils of the patient;

supplying a respiratory gas to the nasal cannula at a constant flow rate sufficient to form a back pressure within the breathing passageways of the patient, at least when the patient is exhaling; and

allowing, at least during exhalation, a portion of the supplied respiratory gas to leak from the nostril between the prongs of the nasal cannula and inwardly facing skin of the nostril.

30. The method of treating the patient with sleep disorder according to claim 29, further comprising the steps of using oxygen as the respiratory gas and supplying the oxygen a flow rate of between about 26 and 60 liters per minute.

31. The method of treating the patient with sleep disorder according to claim 29, further comprising the steps of forming each prong of the nasal cannula with a head at one end thereof having a discharge opening therein for discharging the respiratory gas, and the opposite end of each prong is coupled to a supply line which is connected to a respiratory gas source; and each head is sized to be snugly received and retained within one of the nasal cavities of the patient while forming a sufficient leakage passage, between a portion of inwardly facing nasal cavity skin of a patient and a portion of an exterior surface of the head, to facilitate exhausting of any excess respiratory gas

supplied to the patient through the leakage passage and also facilitate inhalation of any room air required in excess of the respiratory gas to be supplied to the patient.

32. The method of treating the patient with sleep disorder according to claim 29, further comprising the step of heating the respiratory gas to a desired temperature prior to delivering the respiratory gas to the patient.

33. The method of treating the patient with sleep disorder according to claim 29, further comprising the step humidifying the respiratory gas prior to delivering the respiratory gas to the patient.

34. The method of treating the patient with sleep disorder according to claim 29, further comprising the steps of:

heating the respiratory gas to a desired temperature; and

humidifying the respiratory gas to desired humidity prior to delivering the respiratory gas to the patient.

35. The method of treating the patient with sleep disorder according to claim 29, further comprising the step of interrupting the constant flow rate of the respiratory gas, with a metering device, to facilitate conservation of the respiratory gas during treatment of the patient with sleep disorder .

36. A diagnostic tool for measuring nasal cavity pressure of a patient, the diagnostic tool comprising a the nasal cannula comprising:

a pair of supply lines which each have a head at one end thereof with a discharge opening therein for discharging a respiratory gas, and the opposite end of each of the pair of supply lines being connectable to a respiratory gas source;

each head being sized to be snugly received and retained within one of the nasal cavities of the patient while forming a sufficient leakage passage, between a portion of inwardly facing nasal cavity skin of a patient and a portion of an exterior surface of the head, to facilitate exhausting of any excess respiratory gas supplied to the patient through the leakage passage and also facilitate inhalation of any room air required in excess of the respiratory gas to be supplied to the patient;

pressure sensing probe associated with each head; and

each of the pressure sensing probe is coupled to supply a pressure reading to a pressure sensing device.

37. The diagnostic tool according to claim 36, wherein each of the pressure sensing probes is coupled to a single common pressure sensing device.

38. The diagnostic tool according to claim 36, wherein each of the pressure sensing probes is coupled to separate pressure sensing device.

39. The diagnostic tool according to claim 36, wherein the pressure sensing device is a transducer.

40. The diagnostic tool according to claim 36, wherein each of the pressure sensing probes is permanently secured to the head to fix an exposed length of the pressure sensing probes relative to respiratory gas discharge outlets of the head.

41. The diagnostic tool according to claim 36, wherein each of the pressure sensing probes is adjustably secured to the head to facilitate adjustment of an exposed length of the pressure sensing probes relative to respiratory gas discharge outlets of the head.

42. The diagnostic tool according to claim 36, wherein each of the pressure sensing probes passes through an interior space of one of the heads.

43. A method of using a diagnostic tool for measuring nasal cavity pressure of a patient, the diagnostic tool comprising a the nasal cannula comprising: a pair of supply lines which each have a head at one end thereof with a discharge opening therein for discharging a respiratory gas, and the opposite end of each of the pair of supply lines being connectable to a respiratory gas source; each head being sized to be snugly received and retained within one of the nasal cavities of the patient while forming a sufficient leakage passage, between a portion of inwardly facing nasal cavity skin of a patient and a portion of an exterior surface of the head, to facilitate exhausting of any excess respiratory gas supplied to the patient through the leakage passage and also facilitate inhalation of any room air required in excess of the respiratory gas to be supplied to the patient; pressure sensing probe associated with each head; and each of the pressure sensing probe is coupled to supply a pressure reading to a pressure sensing device, the method comprising the steps of:

permitting a patient to sleep;

monitoring the sleeping patient with the diagnostic tool while a respiratory gas is supplied to a patient at a first flow rate;

determining a pressure within the nasal cavity of the patient via the pressure sensing probe; and

adjusting the flow rate of the respiratory gas until an optimum respiratory gas flow rate is achieved which generates a desired back pressure within the breathing passages of the patient so that the patient uniformly breathes while sleeping.